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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/761,591	01/21/2004	Larry Wayne Payne	TH2442 (US)	4285
23632	7590	06/14/2006	EXAMINER	
SHELL OIL COMPANY P O BOX 2463 HOUSTON, TX 772522463			GALE, KELLETTE	
			ART UNIT	PAPER NUMBER
			1621	

DATE MAILED: 06/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/761,591	Applicant(s) PAYNE, LARRY WAYNE	
	Examiner Kellette Gale	Art Unit 1621	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>3/13/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Double Patenting

Claims 1-24 of this application conflict with claims 1-35 of Application No. 10/762,027. 37 CFR 1.78(b) provides that when two or more applications filed by the same applicant contain conflicting claims, elimination of such claims from all but one application may be required in the absence of good and sufficient reason for their retention during pendency in more than one application. Applicant is required to either cancel the conflicting claims from all but one application or maintain a clear line of demarcation between the applications. See MPEP § 822.

Claims 1-24 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-35 of U.S. Patent No. 10/762,027. Although the conflicting claims are not identical, they are not patentably distinct from each other because both sets of claims recite the same limitations with the exception of the following:

10/762,027 recites the limitation that hydroxyketone be present in the product and the catalyst consist of an alumina and a Group VIA metal, whereas, the instant application recites the recitation that a first contaminant by-product be present in the product wherein said first contaminant by-product is hydroxybutanone. Also, an acidic catalyst is recited wherein the acidic catalyst can be an alumina. It is also noted by the examiner that the conflicting application, 10/762,027, utilizes a phenol product whereas, the instant application utilizes a phenol product stream.

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These limitations are considered to be obvious over one another as hydroxybutanone is a hydroxyketone. Also, it is understood by the examiner that the use of a single catalyst vs. the use of a mixture of catalysts would render the same results. The phenol product stream is interpreted to mean an environment where phenol is present; hence, a phenol product is obvious over a phenol product stream.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Zakoshansky et al (US 5,502,259) in view of GB 676,770.

Applicant claims a method comprising purifying a phenol product stream, wherein said phenol product stream comprises a first and second contaminant by-product of a process for making phenol, by contacting, under suitable process conditions with an acidic catalyst; said catalyst being selected from zeolites, ion exchange resins and

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aluminas, and said suitable process conditions being at a temperature from about 50°C to about 250°C, and pressure in the range upwardly to about 100 psig. The phenol in the phenol product stream is in the range of from 95 weight percent upwardly to about 100 weight percent. The second concentration of said contaminant by-product is less than 3 ppmw.

Determination of the scope and content of the prior art

(MPEP §2141.01)

Zakoshansky et al teach a method of purifying phenol wherein an aluminasilicate catalyst (column 2, lines 34-39) is used under process conditions such as a temperature of 140°C (column 2, line 39). The concentration of phenol in the product is taught to be over 99% (please see example 1). A first concentration of contaminant is hydroxyacetone and is present in as low as 1 ppm (please see example 1). A second concentration of contaminant is as low as 2 ppm (please see example 4).

GB 676,770 teaches the production of phenol at high purity (column 1 of page 3, lines 61-63) with process conditions that includes a temperature range between 50°C and 100°C (column 1 of page 2, line 60) and a pressure of 60 lb/sq. in. Also, GB 676,770 teaches an acid-treated bentonite catalyst (column 2 of page 2, lines 70-71). In example 11, hydroxyacetone concentration in the phenol is more than that of OM.

Ascertainment of the difference between the prior art and the claims

(MPEP §2141.02)

Zakoshansky et al fail to teach a pressure in the range upwardly to about 100 psig and hydroxybutanone as a contaminant. GB 676,770 fails to teach contaminants

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present in the final phenol product. Also, a phenol product is recited in the prior art as opposed to the claimed limitation, a phenol product stream.

Finding of prima facie obviousness: Rationale and Motivation (MPEP §2142-2143)

It has well been established by the prior art of record that a method of purifying phenol comprising the limitations set forth by the applicant is not new to the art. Although hydroxybutanone is not recited in the prior art as a contaminant, the recited hydroxyacetone is very close in structure to that of hydroxybutanone and is therefore considered obvious over that limitation. Also, as stated above, a phenol product stream is interpreted by the Examiner to mean an environment where phenol is present; hence the phenol product stream recited by the applicant is obvious over a phenol product. Therefore, it is understood by the Examiner that one of ordinary skill in the art at the time of the instant invention would have been motivated to utilize and incorporate the teachings of Zakoshansky et al and GB 676,770 in order to carry out a process of making high purity phenol.

Claims 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over FR 1,445,829.

Applicant claims a method of making a high purity phenol product comprising subjecting a mixed feed comprising cumene and sec-butyl benzene to oxidation conditions to yield an oxidation reaction product comprising sec-butyl benzene hydroperoxide and cumene hydroperoxide; subjecting a portion of that product to reaction conditions to yield a cleavage reaction product comprising phenol, acetone, and methyl ethyl ketone; separating said cleavage reaction product into at least a

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phenol product stream comprising at least a portion of said phenol of said cleavage reaction product and a contaminant by-product; and contacting under suitable purification reaction conditions said phenol product stream with an acid catalyst to thereby convert at least a portion of said contaminant by-product to a reaction product; wherein, the acid catalyst is selected from a group of catalyst materials consisting of zeolite compounds, cation exchange resins and aluminas and said contaminant by-product includes hydroxyl butanone.

Determination of the scope and content of the prior art

(MPEP §2141.01)

FR 1,445,829 teaches a new phenol purification process wherein the purpose of the invention is to eliminate virtually all impurities containing carbonylic compounds from a phenolic fraction collected from a reaction mixture resulting from the acid cleavage of the hydroperoxide obtained from the oxidation of an aromatic alkyl hydrocarbon (sec.) and, in particular, cumene (page 1, column 2, 1st full paragraph). An aromatic alkyl hydrocarbon (sec.) is oxidized into hydroperoxide that is then subjected to cleavage in order to produce the desired phenol and an aliphatic ketone (page 2, column 1, lines 2-7).

It is also recited that this process can be used to purify the phenolic fraction collected from a reaction mixture resulting from the acid cleavage of the hydroperoxide obtained from the oxidation of cumene, as well as, eliminate the impurities that contain carbonylic compounds of a phenolic fraction collected from a reaction mixture resulting from the acid cleavage of the hydroperoxide obtained from the oxidation of an aromatic

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alkyl hydrocarbon (sec) such as for example sec. Butylbenzene (page 2, column 1, lines 7-22).

This process also involves separation of the reaction mixture resulting from the cleavage reaction followed by an acid catalyzed reaction, wherein the acid catalyst is selected from silica-alumina, silica-zirconia, alumina zirconia and silica-alumina-zirconia (column 1 of page 2, lines 33 and 42-44).

Ascertainment of the difference between the prior art and the claims

(MPEP §2141.02)

FR 1,445,829 fails to name hydroxybutanone as a specific contaminant, as well as, methyl ethyl ketone as a specific component of the mixture obtained from the cleavage reaction.

Finding of prima facie obviousness

Rational and Motivation (MPEP §2142-2143)

Although hydroxybutanone and methyl ethyl ketone are not specifically named as components of the reaction, an aliphatic ketone and carbonylic compounds are named; therefore, those compounds are considered obvious over each other. Based on the facts set forth in this office action regarding the contents of FR 1,445,829, it is well established in the art to produce a high purity phenol product from sec-butyl benzene and cumene. Therefore, one of ordinary skill in the art at the time of the instant invention would have been motivated to perform such a purification in order to arrive at a high purity phenol product.

Conclusion

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kellette Gale whose telephone number is (571) 272-8038. The examiner can normally be reached on M-F (6:30am-3:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thurman Page can be reached on (571) 272-0602. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Kellette Gale
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June 1, 2006


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